

10/072194

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLN. OF: OGAWA

PATENT NO: 6,885,622 B2

ISSUED: April 26, 2005

FOR: Track-Offset Compensation in Optical Disk Drive

GROUP: 2652

DOCKET: NEC GNE 471

Certificate  
JUN 14 2005  
of CorrectionCommissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450**PETITION FOR CERTIFICATE OF CORRECTION**

Dear Sirs:

Ogawa, the Patentee of the above-identified patent, through his attorney, hereby petition for issuance of a Certificate of Correction in the above identified patent. A Certificate of Correction (PTO form 1050) is enclosed, in duplicate. The Certificate of Correction is required to correct significant printing errors occurring in the claims as follows:

Claim 9, Column 17, Line 60, "crack" should be --track--.

Since the error was a Patent Office error, it is believed that the Certificate of Correction should be issued without charge to the Applicant. A copy of Amendment A is attached in support of our claim.

Respectfully submitted,

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Attorney for Applicant  
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JUN 15 2005

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 7, 2005 at Tucson Arizona.

By: \_\_\_\_\_



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# UNITED STATES PATENT AND TRADEMARK OFFICE

## CERTIFICATE OF CORRECTION

PATENT NO : 6,885,622 B2

DATED : April 26, 2005

INVENTOR(S) : OGAWA

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Claim 9, Column 17, Line 60, "crack" should be --track--.

MAILING ADDRESS OF SENDER:

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PATENT NO. 6,885,622 B2

No. of additional copies



# UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENT NO : 6,885,622 *B2*

DATED : April 26, 2005

INVENTOR(S) : OGAWA

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Claim 9, Column 17, Line 60, "crack" should be --track--.

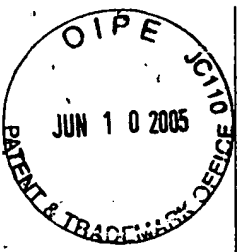
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PATENT NO. 6,885,622 *B2*

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. Of: OGAWA

Serial No.: 10/072,194

Filed: February 7, 2002

For: TRACK OFFSET COMPENSATION IN OPTICAL DISK DRIVE

Group: 2652

Examiner: BATTAGLIA, MICHAEL V.

DOCKET: NEC GNE 471

MAIL STOP AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

AMENDMENT A

Dear Sir:

This Amendment is being filed in response to the *Ex parte Quayle* Action mailed  
July 26, 2004.

Please amend the Application as follows:

**Amendments to the Specification** begin on page 2 of this Amendment.

**Amendments to the Claims** begin on page 5 of this Amendment.

**Remarks/Arguments** begin on page 12 of this Amendment.

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**AMENDMENTS TO THE SPECIFICATION:**

**Please amend the title beginning at page 1, line 1, as follows:**

TRACK OFFSET COMPENESATION COMPENSATION IN OPTICAL DISK DRIVE  
DRIVES USING BEAT-INDUCING SIGNALS

**Please amend the paragraph beginning at page 2, line 15, as follows:**

The offset factors include various types of errors. Examples are: positional deviation of the detector in the optical head[[,]]; bias of the optical beam intensity[[,]]; inclination between the optical head and the optical disk[[,]]; surface unevenness of the optical disk[[,]]; and offset in the electrical system. Thus, it is difficult to eliminate or remove all of these offset factors and to implement necessary servo-control mechanisms while considering all the factors ~~are taken into consideration~~.

**Please amend the paragraph bridging pages 2 and 3, beginning at page 2, line 23, as follows:**

Recently, several standards have been defined [[on]] for Digital Versatile Disks (DVDs), such as DVD-R (Recordable), DVD-R/W (Recordable/Writable), DVD+RW (ReWritable), and DVD-RAM (Random-Access Memory), in the optical disk industry. These standards have been considered as particularly promising standards for next-generation, high-density optical disks and thus, vigorous ~~researches and~~ developments have been being made on these types of optical disks.

**Please amend the paragraph beginning at page 3, line 7, as follows:**

Optical disks according to the above-described DVD standards have guiding grooves wobbled at a specific period. If the reflected light beam by the disk is reproduced using the so-

called push-pull method, a “wobbling signal” having the same period as the wobbling period of the grooves is obtainable. Thus, the wobbling signal is used [[to,]] for example, to achieve the rotational synchronization of the spindle for rotating the disk and/or to generate the write clock for data writing operation. Considering this fact, a serious problem will occur if the wobbling signal is not well reproduced as desired.

**Please amend the paragraph bridging pages 3 and 4, beginning at page 3, line 24, as follows:**

It is known that the quality of the wobbling signal degrades largely after ~~a specific data~~ is recorded or stored on the disk. This is because light and shade spots (or, marks and spaces)[[,]] ~~which is~~ are created by the stored data[[,]] ~~affects~~ . This badly affects the quality of the wobbling signal. Therefore, it is necessary for the wobbling signal to be synchronized with the period of the wobbled grooves even after data is stored on the disk. When the disks are of the DVD+RW type, a critical problem may occur if the wobbling signal is unable to be reproduced well. This is because the buried address information cannot be read out, in other words, the ADIP signal is not reproduced well.

**Please amend the paragraph bridging pages 4 and 5, beginning at page 4, line 18, as follows:**

When the track offset was set at the optimum position, the wobbling signal was synchronized with the wobbling period of the grooves and at the same time, the BLER of the ADIP signal was limited to approximately 60%. However, when the track offset was shifted from the optimum position by only approximately 0.02  $\mu\text{m}$ , the synchronization of the wobbling signal was unable to be achieved and the BLER of the ADIP signal was raised to

approximately 80%. At this time, the signal-to-noise ratio (SNR) of the wobbling signal was measured in a manner according to the ECMA standards. In this case, the SNR thus measured was approximately 38dB not only when the track offset was set at the optimum position but also when the track offset was shifted from the optimum position by approximately 0.02  $\mu\text{m}$ . This means that the value of the SNR changed scarcely even if the track offset varies within this range. In other words, such ~~[[the]]~~ a minute change of the track offset greatly affects ~~distinctly~~ the synchronization of the wobbling signal and the BLER of the ADIP signal. As a result, the track offset needs to be well controlled ~~[[at]]~~ with very high accuracy (i.e., the track offset needs to be optimized) even if no change is observed in the SNR of the wobbling signal due to minute deviation of the track offset.

**Please amend the paragraph bridging pages 5 and 6, beginning at page 5, line 20, as follows:**

Another prior-art method for compensating the track offset is disclosed in the Japanese Non-Examined Patent Publication No. 9-259455 published in 1997. In this method, the fact that the amplitude of the wobbling signal varies with the motion of the lens is utilized. ~~The track offset is compensated by the shift of the lens. The shift of the lens compensates for the track offset.~~

<sup>19</sup>  
**Please amend the paragraph beginning at page 6, line 11, as follows:**

With the above-described prior-art method for compensating the track offset with the lens shift, which is disclosed in the Publication No. 9-259455, ~~the other~~ offset factors other than the lens shift are unable to be considered. Thus, the track offset is not completely ~~compensated~~ corrected.



**AMENDMENTS TO THE CLAIMS:**

Kindly amend claims 13, 15, 18, 19 and 21, as shown below.

This listing of claims will replace all prior versions and listings of claims in the  
Application:

**Claim 1 (original):** A method for compensating track offset in an optical disk drive,  
comprising:

- (a) providing an optical disk with wobbled grooves;  
the wobbled grooves being used for generating a wobbling signal with a wobbling  
period;
- (b) recording a beat-inducing signal on the disk;  
a period of the beat-inducing signal having a specific relationship with the wobbling  
period in such a way that a beat signal is induced by the beat-inducing signal and the wobbling  
signal;
- (c) generating a tracking-error signal using a push-pull method by optically reading the  
wobbled grooves of the disk and the beat-inducing signal recorded on the disk;  
the tracking-error signal containing a beat signal induced by the beat-inducing signal  
and the wobbling signal; and
- (d) compensating track offset based on the beat signal contained in the tracking-error  
signal.

**Claim 2 (original):** The method according to claim 1, wherein the period of the beat-inducing  
signal is set at a value within a range from 0.85 to 1.25 times as much as the period of the  
wobbling signal.

**Claim 3 (original):** The method according to claim 1, wherein a level of the beat signal is compared with a first reference level and a second reference level in the step (d) of compensating track offset, where the first reference level is different from the second reference level;

and wherein if the level of the beat signal has a first relationship with the first reference level and a second relationship with the second reference level, the beat signal is determined as good.

**Claim 4 (original):** The method according to claim 1, wherein a dc component of the beat signal is extracted;

and wherein the track-offset value is set in such a way that the dc component of the beat signal is set at a specific level.

**Claim 5 (original):** The method according to claim 4, wherein the specific level is approximately zero.

**Claim 6 (original):** The method according to claim 1, wherein in the step (d) of compensating track offset, whether the beat signal is good or not is judged with respect to a specific value of the track offset;

and wherein if the beat signal is judged as good, the track offset is fixed at the specific value;

and wherein if the beat signal is judged as no-good, the specific value of the track offset is changed to a different value and then, whether the beat signal is good or not is judged again.

**Claim 7 (original):** A method for compensating track offset in an optical disk drive, comprising:

- (a) providing an optical disk with wobbled grooves and a beat-inducing signal;  
the wobbled grooves being used for generating a wobbling signal with a wobbling period;  
a period of the beat-inducing signal having a specific relationship with the wobbling period in such a way that a beat signal is induced by the beat-inducing signal and the wobbling signal;
- (b) generating a tracking-error signal using a push-pull method by optically reading the wobbled grooves and the beat-inducing signal recorded of the disk;  
the tracking-error signal containing a beat signal induced by the beat-inducing signal and the wobbling signal; and
- (c) compensating track offset based on the beat signal contained in the tracking-error signal.

**Claim 8 (original):** The method according to claim 7, wherein the period of the beat-inducing signal is set at a value within a range from 0.85 to 1.25 times as much as the period of the wobbling signal.

**Claim 9 (original):** The method according to claim 7, wherein a level of the beat signal is compared with a first reference level and a second reference level in the step (c) of compensating track offset, where the first reference level is different from the second reference level;

and wherein if the level of the beat signal has a first relationship with the first reference level and a second relationship with the second reference level, the beat signal is determined as good.

**Claim 10 (original):** The method according to claim 7, wherein a dc component of the beat signal is extracted;

and wherein the track-offset value is set in such a way that the dc component of the beat signal is set at a specific level.

**Claim 11 (original):** The method according to claim 10, wherein the specific level is approximately zero.

**Claim 12 (original):** The method according to claim 7, wherein in the step (c) of compensating track offset, whether the beat signal is good or not is judged with respect to a specific value of the track offset;

and wherein if the beat signal is judged as good, the track offset is fixed at the specific value;

and wherein if the beat signal is judged as no-good, the specific value of the track offset is changed to a different value and then, whether the beat signal is good or not is judged again.

**Claim 13 (currently amended):** A system for compensating track offset in an optical disk drive, comprising:

(a) [[means]] a signal recorder for recording a beat-inducing signal on an optical disk with wobbled grooves;

the wobbled grooves being used for generating a wobbling signal with a wobbling period;

a period of the beat-inducing signal having a specific relationship with the wobbling period in such a way that a beat signal is induced by the beat-inducing signal and the wobbling signal;

(b) [[means]] a signal generator for generating a tracking-error signal using a push-pull method by optically reading the wobbled grooves of the disk and the beat-inducing signal recorded on the disk;

the tracking-error signal containing a beat signal induced by the beat-inducing signal and the wobbling signal; and

(c) [[means]] a controller for compensating track offset based on the beat signal contained in the tracking-error signal.

**Claim 14 (original):** The system according to claim 13, wherein the period of the beat-inducing signal is set at a value within a range from 0.85 to 1.25 times as much as the period of the wobbling signal.

**Claim 15 (currently amended):** The system according to claim 13, wherein a level of the beat signal is compared with a first reference level and a second reference level in the [[means]] controller for compensating track offset, where the first reference level is different from the second reference level;

and wherein if the level of the beat signal has a first relationship with the first reference level and a second relationship with the second reference level, the beat signal is determined as good.

**Claim 16 (original):** The system according to claim 13, further comprising a filter for extracting a dc component of the beat signal;

wherein the track offset value is set in such a way that the dc component of the beat signal is set at a specific level.

**Claim 17 (original):** The system according to claim 16, wherein the specific level is approximately zero.

**Claim 18 (currently amended):** The system according to claim 13, wherein in the [[means]] controller for compensating track offset, whether the beat signal is good or not is judged with respect to a specific value of the track offset;

and wherein if the beat signal is judged as good, the track offset is fixed at the specific value;

and wherein if the beat signal is judged as no-good, the specific value of the track offset is changed to a different value and then, whether the beat signal is good or not is judged again.

**Claim 19 (currently amended):** A system for compensating track offset in an optical disk drive, comprising:

(a) [[means]] a signal generator for generating a tracking-error signal using a push-pull method by optically reading wobbled grooves of an optical disk and a beat-inducing signal recorded on the disk;

the wobbled grooves being used for generating a wobbling signal with a wobbling period;

a period of the beat-inducing signal having a specific relationship with the wobbling period in such a way that a beat signal is induced by the beat-inducing signal and the wobbling signal;

the tracking-error signal containing a beat signal induced by the beat-inducing signal and the wobbling signal; and

(b) [[means]] a controller for compensating track offset based on the beat signal contained in the tracking-error signal.

**Claim 20 (original):** The system according to claim 19, wherein the period of the beat-inducing signal is set at a value within a range from 0.85 to 1.25 times as much as the period of the wobbling signal.

**Claim 21 (currently amended):** The system according to claim 19, wherein a level of the beat signal is compared with a first reference level and a second reference level in the [[means]] controller for compensating track offset, where the first reference level is different from the second reference level;

and wherein if the level of the beat signal has a first relationship with the first reference level and a second relationship with the second reference level, the beat signal is determined as good.

**Claim 22 (original):** The system according to claim 19, further comprising a filter for extracting a dc component of the beat signal;

wherein the track-offset value is set in such a way that the dc component of the beat signal is set at a specific level.

**Claim 23 (original):** The system according to claim 22, wherein the specific level is approximately zero.

**Claim 24 (previously presented):** An optical disk drive comprising the system according to claim 13.

**Claim 25 (previously presented):** An optical disk drive comprising the system according to claim 19.

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**REMARKS**

The allowance of claims 1-25 is noted, with thanks. Claims 13, 15, 18, 19 and 21 have been amended to eliminate "means" language and operation of 35 USC § 112(6).

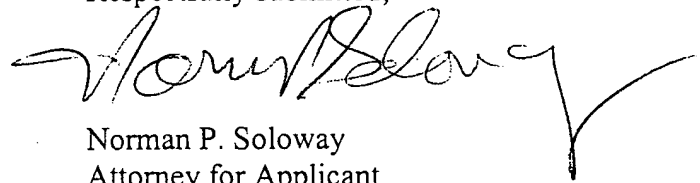
The title has been amended to correct a minor typographical error and to better describe the invention, as required by the Examiner. The specification has been amended to employ more idiomatic English.

No new matter has been entered by any of the foregoing amendments.

All of the objections raised by the Examiner have been addressed. Thus, issuance of the Notice of Allowance is respectfully requested.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account Number 08-1391.

Respectfully submitted,



Norman P. Soloway  
Attorney for Applicant  
Reg. No. 24,315

**CERTIFICATE OF MAILING**

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August 13, 2004, at Tucson, Arizona.

By 

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